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Research Paper

Identifying Core Indicators of Sustainable Competitiveness for Malaysian Tourism

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Abstract

This study examined the concept of sustainable competitiveness bridging the national productivity and sustainable development. Indeed, the overwhelming choices of indicators may lead to ineffective adoption and policy implementation in the industry or country level. Based on the Sustainable Competitiveness Index (SCI) proposed by the World Economic Forum, this study presents an effective metrics that comprehensively measures the tourism sustainable competitiveness for Malaysia. Findings revealed that the five key dimensions are human capital; market conditions; policy environment and enabling conditions; physical environment; and technology and innovation. The important features identified using random forest regression indicated 12 key indicators that may serve as a starting point for practitioners, tourism business leaders and policymakers to move towards the Sustainable Competitiveness path. The constructed Tourism Sustainable Competitiveness Index (TSCI) also traced six impactful tourism crises successfully. The TSCI may act as an early warning tool, essential for crises management as well as recovery planning.

Keywords: Sustainable competitiveness, Indicators, Early warning tool, Tourism sustainability, Random forest, Malaysia.

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Introduction

For more than three decades, the World Economic Forum has been analyzing the theory of competitiveness to comprehend and measures the drivers of economic well-being (Blanke et al., 2011). Within the defined conceptual framework, competitiveness is "the set of institutions, policies, and factors that determine a country productivity level" (Grauwe, 2013). Its adaptation and the resultant approaches undertaken should remain highly relevant to guarantee a nation's competitiveness in the ever-changing global economic scene.

Alongside the most recent global development themes is the concept of sustainability that has captured the attention of policymakers, business leaders and the public at large. In a broad view, sustainability can be defined as development that satisfies the present needs without compromising the ability of future generations to meet their own needs. Since the 1980s, the Triple Bottom Line has been the common business accounting framework used to evaluate an entity's financial gains as well as its social and environmental impact. Albeit its wide adaptation, the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al., 2009) has called for the need of a more comprehensive, integrated, and holistic approach in measuring economic performances. Some latest initiatives that are intended for the same cause include the European Commission's Sustainability Report, the World Bank's Worldwide Governance Indicators, and the International Monetary Fund's Global Financial Stability Report to measure sustainability from the social and economic perspectives.

The competitiveness theory in economics covers a wide range of definitions from firm-level competitiveness to sectors competitiveness, regional competitiveness, and international competitiveness (Balkyte & Peleckis, 2010). This study presents the theoretical development and advancement in existing theory by embracing the growing role of sustainable development as well as the transition to a "green" economy in the tourism context. The development on both competitiveness and sustainability themes have been exciting in recent years. However, there is still a lack of a well-established body of literature on its association when related to the productivity of a country, i.e., the "sustainable competitiveness". This is a nascent area of research, particularly in terms of tourism.

In the competitive environment, global tourism destinations are compelled to survive in the fast-changing and dynamic environment while struggling to remain sustainable. Maharaj and Balkaran (2014) emphasize that destination competitiveness not only having significant influence on the profitability and sustainability of tourism destinations, it also a key theme associated with tourism development. The initiatives that able to boost the tourist arrivals such as human resource development and infrastructure development could be proposed through the enhancement of competitiveness. The connection between sustainability and competitiveness is noticeable in literature. Tourism competitiveness is adhered to be a determinant of the economic sustainability of tourism (Wondowossen et al., 2014). Therefore, competitiveness is not just about growth and economic performance (Balkyte and Tvaronavičiene, 2010), but also sustainability. This study outlines the new approach to competitiveness theory and presents the existing knowledge of the association between sustainable and competitiveness through the development of a holistic framework that represents key dimensions of sustainable competitiveness.

Sustainable competitiveness is defined as the set of institutions, policies and factors that determine the level of productivity of a country while ensuring social and environmental continuation. There are undoubtedly some form of indicators to measure the sustainable competitiveness of the tourism sector, but there seems to be a lack of key indicators that can encourage real actions. Instead of generating an impressive list of indicators, the current study proposes an alternative approach to identify the core indicators that can be easily understood and translated into real actions in a more meaningful manner. The current body of literature, identified based on reports published between 2000 and 2020, encompasses more than 100 indicators. The existing frameworks comprised of the Sustainable Competitiveness Index (SCI) and Global Competitiveness Index (GCI) published by the World Economic Forum (Blanke et al., 2011). This is followed by the Sustainable Tourism Index (STI) published by the World Travel and Tourism Council (Economist Intelligence Unit Limited, 2017); the Travel and Tourism Competitiveness Index (TTCI) published by the World Economic Forum (Calderwood & Soshkin, 2019); and the Sustainable Development Goals (SDG) Index (Sachs et al., 2020).

With the looming health and economic aftereffect of the Covid-19 pandemic outbreak remains an uncertainty at large, it becomes critical that a set of key indicators can be identified for short-term and long-term actions as a form of crisis management. Choosing the right indicators is the central issue of the public, government, policy makers and businesses before the right actions can be identified to generate the right outcome and manage this crisis. The problem is the distraction caused by too many indicators (Marzo-Navarro et al., 2015). Undeniably, the decision-making process can emerge as a key barrier to effective implementation of tourism policies, particularly when business practices failed to keep up with changing trends (Muangasame & McKercher, 2015).

Chernev et al. (2015) further elaborated that the overloading of choices adds more hurdles to the decision-making process to finalize on an informed decision, since all choices involve some form of trade-off. On top of this is the failure to identify the core issues, which can further obscure the clear line of sight when there is already an overloading of indicators. An alternative school of thought suggested that identification of smaller number of core indicators allow decision makers to adopt and embed it easier and to assess progress towards achieving Sustainable competitiveness (Gourville & Soman, 2005). The measure of specific indicators varies from business to business, but generally the failure in adaptation by the industry is due to lack of commitment and support; lack of decent actionable plan and framework; imprecise targets and outcomes; and slow progress in development of systematic measures (Larson & Poudyal, 2012; Marzo-Navarro et al., 2015; Streimikiene et al., 2021; Achmad & Yulianah, 2022).

As such, instead of creating new indicators, the principal objective of this study is to integrate the previous reports and studies to surface the common themes and sub-themes that are useful to identify the key features of effective indicators and can be easily adopted by the industry. This study also intends to contribute to the growing body of literature on the concept of sustainable competitiveness, rather than sustainability or competitiveness solely. A quantifiable combinatorial model of key dimensions that conjointly contribute towards sustainable competitiveness are proposed in this study. Through the usage of a valid quantitative dataset, this study

theoretically and empirically sheds light on the important dimensions of sustainable competitiveness within tourism context.

Literature Review

Competitiveness indicates the local productivity level instead of the cost-efficiency or market share nor the nation's ability to compete in the international market (Delgado et al., 2012). According to Porter et al. (2008), the productivity level positions the prosperity level that can be reached by an economy in relation to the country's economic output. The productive capacity of a nation is contributed by the living standards of the people, the people's freedom of choices as well as an equal distribution of opportunities (Commission on Growth and Development, 2008). Productivity is one of the meaningful concepts of competitiveness since it determines the investments' rates of return, which are the fundamental drivers of an income growth and output of the economy. To understand the productivity concept, requires a broad perspective on the relationship between economic, political, societal, and environmental concurrently.

Doyle and Perez-Alaniz (2017) identified the most comprehensive work to date is the Global Competitiveness Index (GCI). The Sustainable Competitiveness Index (SCI) adapted from the GCI is the central framework for this study. The SCI framework consists of five pillars, 17 sub-pillars and 133 indicators (Blanke et al., 2011). Apart from the central framework, there are three auxiliary frameworks that can also enhance the selection of indicators for the tourism industry. The World Travel and Tourism Council (WTTC) suggested five main pillars of Sustainable Tourism Index (STI) (Economist Intelligence Unit Limited, 2017) to assess the countries on their commitment to develop and promote sustainable practices in tourism. These pillars are comprised of policy and regulatory environment; environmental sustainability; socio-cultural sustainability; economic sustainability; and the travel and tourism industry. These come with 19 qualitative and quantitative indicators. Findings revealed that the world's developed countries have done more at the national level to formulate policy, foster adherence for standard recognition, encourage business travelers to reduce environmental footprint, coordinate with private sector, and form well protection on cultural and historical assets.

The World Economic Forum has also proposed a set of factors to measure the sustainable development of the tourism sector for 140 economies, known as the Travel and Tourism Competitiveness Index (TTCI) (Calderwood & Soshkin, 2019). TTCI is constituted of four subindexes, 14 pillars and 90 indicators. The four subindexes include the enabling environment sub-index; the travel and tourism (T&T) policy and enabling conditions sub-index; the infrastructure sub-index; and the natural and cultural resources sub-index. TTCI allows cross-country comparison and provides an insight into the strengths and areas for development of each country. The popular 17 Sustainable Development Goals (SDGs) use the SDG Index (Sachs et al., 2020) to summarize the current performance and trends of 166 countries using 115 indicators. The Sustainable Development Report (SDR2020) framed the long-term strategies towards more resilient and sustainable societies apart from providing the immediate post-crisis recovery direction. The SDR2020 generally indicated that the Southeast Asian region has progressed well when measured using the SDG index score. This

should not come as a surprise, since the region has also been managing the Covid-19 outbreak relatively more effectively than other countries.

The Porter's Diamond Model (Porter, 1990) identified that the interlocking relationship of productivity is related to the macroeconomic environment, business sophistication, business environment. The SCI covering 113 indicators (Blanke et al., 2011) is widely applied and acknowledged as one of the most theoretically grounded approach (Lall, 2001; Doyle & Perez-Alaniz, 2017). Bucher (2018) also emphasized that the competitive index can assist in creating a competitive strategy for countries. The SCI employs weighting systems to assign the relative importance of different indicators in line with the theory that emphasizes the nature of competitive advantage (Porter et al., 2008). The SCI measures Sustainable competitiveness based on the human capital; the market conditions; technology and innovation; the policy environment and enabling conditions; and lastly the physical environment. Within the realm is the important concept of "irreversible environmental degradation" used to explain the sustainability issues caused by anthropogenic-related environmental pressure and pushes our natural resources beyond its capacity (Middleton, 2013; Doyle & Perez-Alaniz, 2017). Hedlund et al. (2020) opines that, by decoupling "environmental bads" from "economic goods", further growth in economic is able to minimize the core issues of sustainability. Besides, both environmental and social sustainability are largely interdependent (Doyle & Perez-Alaniz, 2017).

Previous literature done by Agyeiwaah et al. (2017) and Doyle and Perez-Alaniz (2017) have identified numerous core indicators for sustainable competitiveness and sustainable tourism from different aspects. Some of the commonly used environmental indicators including carbon dioxide emissions (Camisón, 2020, Jong et al., 2022); intensity of water resources uses; intensity of forest resources uses (Blanke et al., 2011; Escoto et al., 2019); intensity of energy uses (Soh et al., 2020); endangered species; energy consumption and generation (Jong et al., 2020); water treatment; and recycling rate. As for the features of social sustainability, the common indicators used are gender equality (Boluk et al., 2019); education (Lopes et al., 2018; Boluk et al., 2019); absence of violence (Lopes et al., 2018); dependency ratio; child mortality rate; equitable access to resources and social services (Gavurova et al., 2020); employment; empowerment and participation; and other key indicators related to quality of life. Meanwhile, Agyeiwaah et al. (2017) also identified four central dimensions (economic, social, environmental, cultural) and three peripheral dimensions (political, management/institutional, technology) of sustainability that adhered to Elkington's (1994) universally accepted triple bottom line approach. In the current study, the Sustainable Competitiveness Index (SCI) is employed as the core framework for clarifying the effective measures and implementation of key indicators in tourism market.

This study makes a significant contribution to bring the attention of practitioners to useful indicators in implementing their business strategies and decision-making process. The underlying process by which sustainable competitiveness influences tourist arrivals is articulated across the identification of possible useful indicators. Balkyte and Tvaronavičiene (2010) emphasized the facets of sustainable competitiveness that embraces the use of resources; a resource-efficient economy; an equitable cost-benefits distribution economy; a cohesive society; and the will to turn environmental challenges into growth opportunities. Competitiveness theory is a

prominent concept in current economic policies. However, competitiveness remains vague and ambiguous in designing the national or regional policies and strategies. Besides, different approaches of competitiveness theory are still underexplored in the past literature. This study outlines the perception of competitiveness in the context of sustainable development that have not been explored in-depth in previous literature. The study that focusing on identifying the core indicators towards the sustainable competitiveness concept may lead to new theoretical framework describing the interaction of sustainable development and competitiveness. Furthermore, the mechanism of how sustainable competitiveness influences the tourism sector reinforces the necessity to identify possible useful and efficient indicators.

Methodology

The current study aims to identify the core indicators for the Malaysian tourism industry in accordance with the Sustainable Competitiveness Index (SCI) conceptual framework. This study used a holistic approach to systematically scrutinize the causal relationship between productivity and societal sustainability. This proposed framework has been theoretically tested in previous works, based on the tools that have been utilised in the quantification of competitiveness and sustainable tourism. Drawing from the work of Torres-Delgado and Palomeque (2018), the first extensive indicators list has been defined and selected to be consistent with the objective of sustainable competitiveness as shown in Table 1. This list is applicable both locally and internationally, developed using widely available data and straightforward calculation and data processing.

The official indicators endorsed by the UN Statistical Commission (Sachs et al., 2020) used five criteria to determine the metrics of the indicators. Firstly, the indicators should be relevant and signify the concept of sustainable competitiveness. Secondly, the selected indicators should be statistically adequate and depict valid measures. Thirdly, the indicators should be always up-to-date and published on a reasonably prompt basis. Fourthly, concerning the data quality, the data series used should sufficiently represent the measure for sustainable competitiveness and are derived from reliable official national or international sources. Finally, the data coverage must be consistent and appropriate to be employed in the framework of Malaysian tourism. Following the criteria mentioned above, a total of 53 indicators have been selected from the initially more than 100 indicators to quantify the sustainable competitiveness of Malaysian tourism sufficiently and effectively (Torres-Delgado and Palomeque, 2018).

The 53 indicators have been further scrutinized through the variable importance assessment using random forest regression (Breiman, 2001). Grömping (2009) emphasized that random forests perform well with high dimensional data. As this study is working with subsets of data, random forest regression is selected among the others variable assessment tools such as factor analysis or principal component analysis. The dataset consists of monthly data collected from 2000 to 2020 from reliable international sources, including CEIC, WTTC, WDI, The World Bank, UNDP, IMF, UN, ITU, UNWTO, UNEP, UNESCO, and IUCN. The data has been interpolated using the Chow-Lin (1971) interpolation technique to ensure the frequency consistency. The regression has been programmed using the scikit-learn

(sklearn) library written in Python programming language to perform the variable importance assessment. Previous research also justified that the practice of random forest algorithms in economic forecasting can consistently provide better outcomes (David et al., 2017; Joshi et al., 2018; Tan et al., 2019).

Table 1: Proposed Framework for a System of Sustainable Competitiveness Indicators

Pillar	Sub-pillars	Indicators	Source
Human capital	Heath and primary education	Prevalence of HIV (% of population)	WDI
		Child mortality rate	WDI
		School life expectancy	UNDP
	Higher education and training	Adult literacy	UNDP
		Mean years of schooling	UNDP
		Employment in T&T sector (% share)	WTTC
	Social cohesion	Youth dependency ratio	CEIC
		Gender Parity Index for GNI per capita (female/male)	UNDP
Market conditions	Labour market efficiency	Purchasing power parity	CEIC
		Tax payment	WDI
		Female labour force participation	WDI
		Women, Business and the Law indicators	WBL
	Financial market development	Fund Management: AUM: Local: Equities	CEIC
		Financial soundness (%) (Deposit Takers: Capital Adequacy: Non-Performing Loans Net of Provisions to Capital)	IMF
		Strength of Legal Rights Index: 0=Weak To 12=Strong	CEIC
	Market size	Capital Investments in T&T sector (% exports)	WTTC
		FDI inflows (% of GDP)	WDI
	Goods market efficiency	New business	CEIC
		Labour Tax and Contributions: % of Commercial Profit	CEIC
		Profit Tax: % of Commercial Profits	CEIC
		Other Taxes Payable by Businesses: % of Commercial Profits	CEIC
		Imports of Goods and Services (% of GDP: Growth)	CEIC
		MIER: Capacity Utilization Rate: Month Average (cut off pt=100)	CEIC
		Tourism sector growth (% growth)	WTTC
		Online Service Index score for E-Government	UN
Technology and innovation	Technological readiness	Cybersecurity	ITU
		International internet bandwidth per internet user	ITU
		Mobile social media penetration	GSMA
		Broadband internet subscribers	ITU
	Business sophistication	Business Tendency Survey (BTS): Current: Gross Revenue: All Sectors (%)	CEIC
	Innovation	Trademarks	CEIC
		Tertiary education	GSMA

Policy environment and enabling conditions	Public Institutions	Military spending (% of government expenditure)	WDI
		Trade openness	TWB
		Number of regional trade agreements in force	UNWTO
		Absence of violence	WDI
		T&T government expenditure (% share of total tourism expenditure)	WTTC
	Infrastructure	Airport density	WDI
		Automated teller machines per adult population	IMF
		Hotel rooms	TWB
		Number of mobile apps available in national language(s)	GSMA
	Macroeconomic environment	Government Debt	IMF
		Gross National Saving Rate (%)	CEIC
		Interest Rate Spread (% pa)	CEIC
		Government Budget (Consolidated Fiscal Balance: % of Nominal GDP)	CEIC
	Environmental policy	Participation rate in multilateral environmental agreements	UNEP
		Number of world heritage natural sites	UNESCO
Physical environment	Resource efficiency	Energy use per capita kilograms	OWID
		CO2 emissions	OWID
		Percentage of population with access to electricity	TWB
	Management of renewable resources	Forest rents (% of GDP)	WDI
		Total natural resources rents (% of GDP)	WDI
	Environmental degradation	Threatened species	IUCN

Source: Adopted from the Sustainable Competitiveness Index (SCI), World Economic Forum (Blanke et al., 2011). WDI = World Development Indicators, The World Bank; UNDP = United Nations Development Programme; WTTC = World Travel and Tourism Council; WBL = Women, Business and the Law; IMF = International Monetary Fund; UN = United Nations; ITU = International Telecommunication Union; GSMA = GSMA Intelligence; TWB = The World Bank; UNWTO = World Trade Organization; UNEP = United Nations Environment Programme; UNESCO = United Nations Educational, Scientific and Cultural Organization; OWID = Our World in Data; IUCN = International Union for Conservation of Nature.

The model developed using machine learning had been subjected to dimension reduction, cross validation and model optimization. Feature engineering was performed to identify the important explanatory variables in the prediction model. Variables that depicted multicollinearity were eliminated. Variable importance assessment, also known as feature weighting using random forest algorithms, was conducted to identify the optimal degree of influences of the explanatory variables (Grömping, 2009). Then, a performance matrix was assigned to evaluate the accuracy of the prediction model. In this case, the root mean squared logarithmic error (RMSLE) has been used following the equation ($RMSLE = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(\log(y_i + 1) - \log(\hat{y}_i + 1))^2}$). The rule of thumb of RMSLE is that the lower the RMSLE, the higher the accuracy of the model. The R-squared statistical measure had also been used to identify the portion of the observed variation that can

be explained by the explanatory variables. For example, if the R-squared of the model is 0.80, it means 80% of the observed variation is explainable using the model's inputs.

The identified important indicators were then subjected to an arithmetic-based indicator construction process. Referring to Blanke et al. (2011), Economist Intelligence Unit Limited (2017), Calderwood and Soshkin (2019), and Sachs et al. (2020), the process begins with using the min-max scalar to normalize all the variables into the range [0, 1] to ensure all variables are measured on the same scale and contribute evenly to the model fitting instead of creating a bias. If a variable signifies a desirable scenario when its value is large, then the formula to be used is $N_i^c = \frac{X_i^c - min_c X_i^c}{max_c X_i^c - min_c X_i^c}$. Otherwise, if a variable signifies an undesirable scenario when its value becomes large, then the formula becomes $N_i^c = \frac{max_c X_i^c - X_i^c}{max_c X_i^c - min_c X_i^c}$, where N_i^c denotes the normalized coefficient for the country *c* and indicator *i*. After data normalization, the data aggregation process was conducted to summarize all the data collected from different sources. The composite index, denoted as y_k^c , is constructed using the formula $y_k^c = \frac{1}{n_k} \sum N_i^c$ where *k* refers to the dimension and n_k refers to the number of features in *k*. The World Economic Forum has reported a good composite index that has been constructed in such manner, which is the Tourism Sustainable Competitiveness Index (TSCI). This index is an arithmetic mean of five dimensions, where each dimension represents a sub-index that has been calculated as the un-weighted average of the individual indicators. The TSCI is found to be an adequate index in this case for Malaysia. Subsequently, the TSCI fulfils the equation $TSCI = \frac{1}{5} \sum y_k^c$. In this case, the TSCI denotes the constructed index for Malaysia. Finally, the cyclical component of the constructed TSCI and the benchmark variables were extracted using the Christiano and Fitzgerald (2003) band-pass filter (Arip et al., 2019; Soh et al., 2021) to identify the impactful crises to call for actionable plans as part of crisis management. In this section, the detailed methodology steps to achieve the study objectives has been explained. The following section explores and discusses the empirical results.

Results and Discussion

The section describes, in greater detail, the identification of key indicators for the sustainable competitiveness of the Malaysian tourism industry as well as the form of plausible crises. The ranking of important variables, as identified through feature engineering and fitted with default settings, is shown in Figure 1. Out of the 53 indicators identified earlier, only 12 indicators were important to describe the sustainable competitiveness of the Malaysian tourism industry. This study used the "international tourist arrivals" as the dependent variable, similar with work done by Escoto et al. (2019) and Soh et al. (2021). The extensive margin (i.e., tourist arrivals) signifying the tourism flows and tourism flows respond rather strongly to the changes in the tourism destination country. The ranking showed that newly registered businesses is the topmost important feature. This is followed by individuals using the internet; trademarks; youth dependency ratio; energy use per capita; number of hotel accommodations; total natural resources rents; government debt; carbon dioxide

emissions; employment in travel and tourism (T&T) sector; trade openness; and capital investments in the T&T sector.

Table 2 portrays the random forest regression prediction results with the number of international tourist arrivals to Malaysia (TA) set as the dependent variable. The model's performance is promising, whereby it showed that 88.41% of the variation in international tourist arrivals can be explained using the 12 variables identified earlier. This shows a myriad of actions that can be taken to boost the Malaysian tourism industry. For example, a favourable and conducive business environment can attract more business travellers. Moreover, having more individuals using the internet also signifies the Information and Communications Technology (ICT) readiness of the country to cater for better connectivity when tourists arrive. Fernández et al. (2020) emphasized that ICT readiness is one the important factors of tourism competitiveness while Uyar et al. (2022) found that ICT readiness drives a negative change in tourist arrivals.

Figure 1: Ranking of Important Variables Identified through Feature Engineering

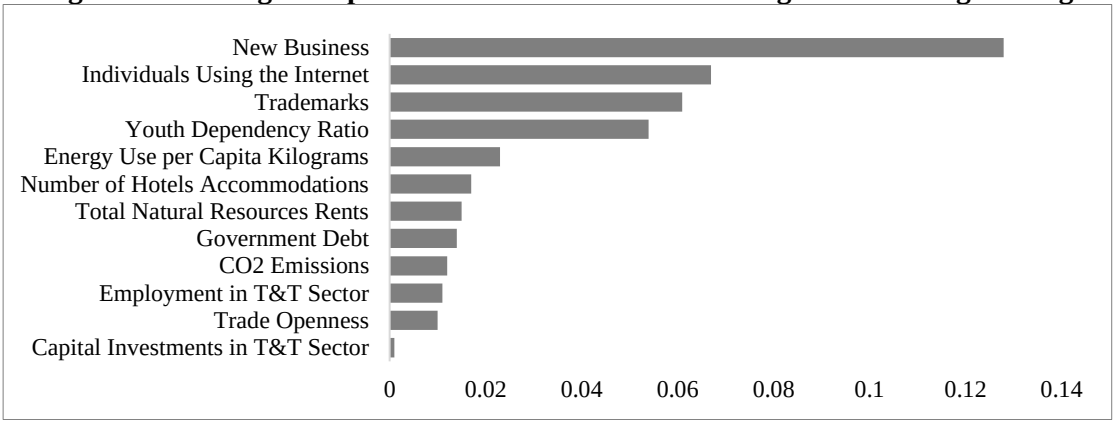
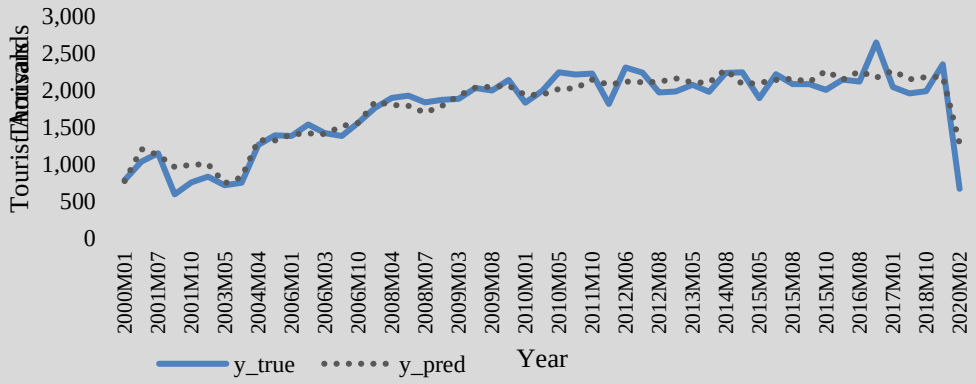


Table 2: Random Forest Regression Results

Dependent Variable : International Tourists Arrivals



Root Mean Squared Logarithmic Error (RMSLE)	0.0198
R-squared	88.41%
Observations	252

Based on the TSCI, the main five pillars or dimensions of the tourism sustainable competitiveness are the social, economic, political, environmental, and technological pillars. The indicators used to represent different sub-pillar including social cohesion, quality of life, business visibility, business viability, trade policy, macroeconomic environment, infrastructure, management of renewable resources, energy conservation, resource efficiency, technology readiness as well as innovation. Despite a broad range of indicators, the objective in solving the overwhelming issue has been achieved through the simplicity of indicators. This is helpful for the development of new strategies which are beneficial for the advancement of the tourism sector in Malaysia. These indicators were identified through various reliable sources such as CEIC, WTTC, IMF, WDI, OWID, ITU and the World Bank. Table 3 depicts the Tourism Sustainable Competitive Framework for Malaysian tourism. Meanwhile, the summary of the descriptive statistics including dependent variables (TA) is demonstrated in Table 4.

The Human Capital pillar captures the general social conditions and driver of productivity in short and long term. Social cohesion proxy by youth dependency ratio, measuring the extent to which the expectation on demographic trend to support future well-being, competitiveness, and productivity of the country. Besides, the extent of employment in travel and tourism sector not only impact on existing social structure, but it also signifies the life quality and living standards of the community. The Market Conditions pillar captures the proper functioning of markets in an efficient way, targets to maintain a healthy business competitive environment with favourable business visibility while keeping economic distortions to a minimum range. To proxy business viability, the survival of business is linked to financial performance and capital allocation in tourism sector.

The Policy Environment and Enabling Conditions pillar captures the physical and macroeconomic infrastructure of economies. The sub-pillar of macroeconomic environment proxy by government debt, to signify the process of refinance maturing debts and finance budgeted fiscal deficit in the country. Meanwhile, a well-developed infrastructure such as hotel accommodations has a substantial impact on economic growth and a significant impact on sustainable competitiveness. In terms of the Physical Environment pillar, the framework aims to capture a well-managed environment through three channels. First, the management of renewable resources sub-pillar aims to measure the availability of resources in the future. Second, energy conservation sub-pillar captures the efficient use of energy. Third, the resource efficiency sub-pillar captures the efficient use of existing resources can significantly support a higher productivity and competitiveness. The Technology and Innovation pillar captures the technological adoption and the competence in innovation for the country to compete and prosper.

Table 3: Malaysian Tourism Sustainable Competitiveness Framework

Pillar	Sub-pillar	Indicator		Source
Human Capital (**Social**)	Social cohesion	Youth Dependency Ratio	**YDR**	CEIC
	Quality of life	Employment in T&T Sector	**EMP**	WTTC
Market Conditions (**Economic**)	Business visibility	New Business (newly establishment registered)	**NB**	CEIC
	Business viability	Capital Investments in T&T Sector (% exports)	**CI**	WTTC

Policy Environment and Enabling Conditions (**Political**)	Trade policy	Trade Openness	**TO**	TWB
	Macroeconomic environment	Government Debt	**GD**	IMF
	Infrastructure	Number of Hotels Accommodations	**HA**	CEIC
Physical Environment (**Environmental**)	Management of renewable resources	Total Natural Resources Rents (% of GDP)	**TNR**	WDI
	Energy conservation	Energy Use per Capita Kilograms	**ENER**	OWID
	Resource efficiency	CO2 Emissions	**CO**	OWID
Technology and Innovation	Technological readiness	Individuals using the Internet (% of population)	**IUI**	ITU
	Innovation	Trademarks	**TRA**	CEIC

Note: WTTC = World Travel & Tourism Council; OWID = Our World in Data; ITU = International Telecommunication Union; IMF = International Monetary Fund; WDI = World Development Indicators; TWB = The World Bank.

Table 4: Summary Statistics

Variable	Mean	Median	Maximum	Minimum	Std Dev	Skewness	Kurtosis
TA	1688505	1895489	2806565	5411	591617	-0.941	3.395
CI	7.952	7.524	14.187	6.344	1.743	1.654	5.662
EMP	11.824	11.757	14.749	10.519	0.787	1.487	6.202
CO	7.249	7.417	8.720	4.835	0.999	-0.585	2.439
ENER	33138.870	33608.070	38156.890	24301.570	3959.444	-0.622	2.218
GD	47.769	50.846	67.430	32.520	8.474	-0.061	1.719
HA	3046	2373	5382	1411	1242	0.659	1.901
IUI	56.127	56.117	89.560	13.066	19.122	-0.289	2.347
NB	3507	3612	4132	2629	421	-0.527	2.115
TNR	9.564	9.675	13.750	5.090	2.329	-0.049	2.127
TO	167.385	160.053	220.410	160.053	116.43	33.034	0.092
TRA	27237	25767	46610	13713	9017	0.408	2.109
YDR	42.599	42.206	54.335	33.800	6.302	0.248	1.775

Different from previous studies (Doyle & Perez-Alaniz, 2017; Camisón, 2020), the findings revealed that the inclusion of "soft factors" in competitiveness theory is important to attract international tourist arrivals to Malaysia. For instance, "soft factors" of competitiveness such as social cohesion, quality of life, and technological readiness are parts of the research framework. Meanwhile, previous studies (Basiago, 1998; Larson & Poudyal, 2012; Boluk et al., 2019) related "sustainability" to development theory. Our findings also embraced the three main pillars of sustainability, i.e., social sustainability, economic sustainability, and environmental sustainability. Following the theoretical framework elaborated by Kahn (1995), economic, social, and environmental sustainability must be integrated, interlinked and coordinated in a comprehensive manner. Basiago (1998) suggested that planning for people is crucial for economic sustainability to ensure the city is more "green" and more livable for people. Business visibility estimates the future short- and long-term performance while business viability links financial position and performance. Feature engineering using random forest regression have successfully identified and traced the proxy indicators to predict the Malaysian tourism for better policy planning.

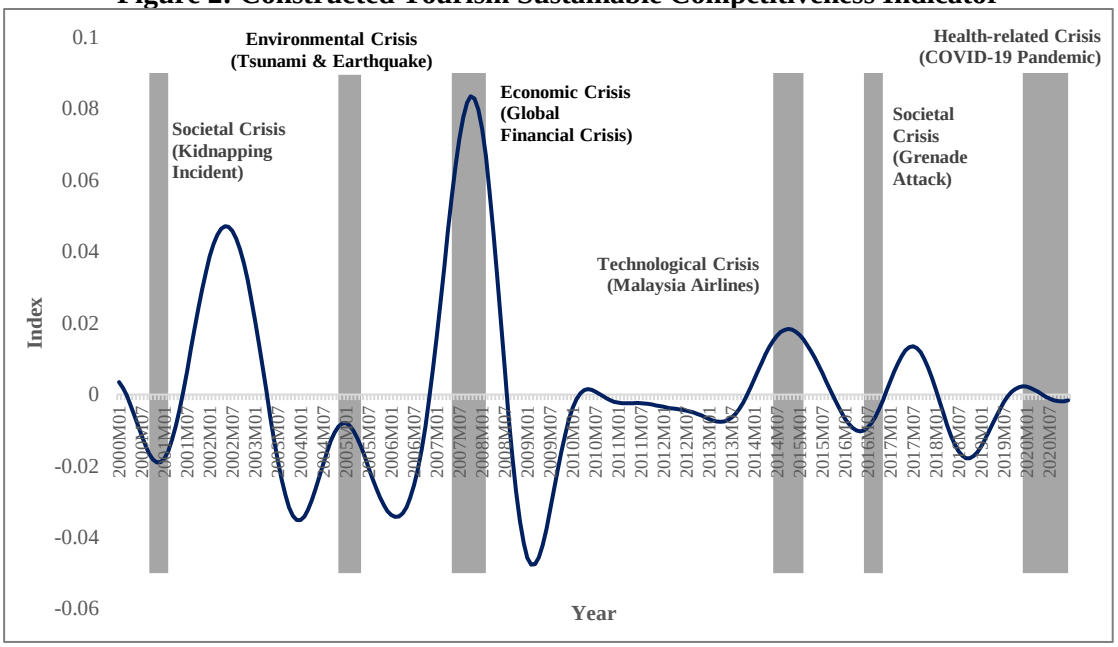
The youth dependency ratio measures the percentage of dependent youth to the percentage of working adults. Higher dependency ratio leads to lower tax revenues. As Delgado et al. (2012) mentioned, competitiveness has a high relevancy with a country's productivity generated from the working population. This means that the variable is empirically significant to signify the country's performance. Uyar et al. (2022) justified that the labor market has a positive association with the tourist arrivals and proper training on employees may contribute to a more competent environment. Besides, the percentage of capital investments in the tourism industry is a proxy to business viability to promote long-term economic growth. The financial contributions through new investment that are aligned with sustainable development can be instrumental in filling the financing gap for the tourism market and businesses (UNCTAD, 2021). In terms of a conducive policy environment and enabling conditions, a supportive trade policy environment significantly stimulates income and entrepreneurship, which benefits the tourism business sectors and nation prosperity. The provision of new infrastructure such as hotel accommodation allows a country to own a competitive advantage in tourism services with lower opportunity cost as compared to other countries. Government debt as one of the competitiveness measures (Wojtasiak-Terech, 2019) reflects the risk to debt sustainability in a nation.

Furthermore, environmental sustainability measurement is comprised of total natural resources rents; energy use per capita; and carbon emissions. These are also captured in the sustainable competitiveness framework. The human demand related to natural resources refers to the sum of oil rents, natural gas rents, coal rents, mineral rents, and forest rents. Owing to the fundamental importance of natural resources with economic growth, these must be managed sustainably (Mehar et al., 2018). The country's action on climate change issue from the level of a company down to an individual is important in the landscape of sustainable competitiveness. To be precise, it is a country's duty to manage global climate change when there is an overwhelming number of tourist arrivals (Kamal-Chaoui & Robert, 2009). In terms of innovation, trademarks are an essential part of intellectual property to allow tourism businesses to promote their own uniqueness within the market. A distinctive trademark supports the destination branding that can attract more travellers. As one of the major contributing industries in Malaysia that provide significant impact to the economy, tourism businesses with trademarks represent image branding that are directly linked to the nation's global reputation.

Having discussed on the identification of key indicators for sustainable competitiveness, the next section addresses ways of index construction using the arithmetic index approach. In regard to UNWTO, there are five types of crises including economic crises, environmental crises, societal or political crises, health-related crises, and technological crises that can impact the tourism industry at the local, regional, or national level. After the cycle extraction, there are six impactful crises that have caused fluctuation in the constructed TSCI. Despite the role of tourism sector as one of the world's fastest growing industries, it is still relatively vulnerable to impactful crises. The shaded region in Figure 2 illustrates the evolution of constructed TSCI using the 12 key indicators. Several major episodes of vulnerability in Malaysian tourism history can be identified using the time trend analysis. Based on the study period, the first significant crisis that depicted tourism vulnerability occurred in 2000 due to the kidnapping incidents in Sipadan Island, Sabah. The cross-border attacks in Sabah had negatively impacted the tourism market

in Malaysia, especially when it comes to international tourist arrivals. Such safety issues need to be eliminated for positive economic gains.

Figure 2: Constructed Tourism Sustainable Competitiveness Indicator



The subsequent tourism vulnerability was due to the tsunami and earthquake happened in 2004/2005. This brought about catastrophic environmental crises, destroyed many tourism infrastructures at coastal areas and heightened the fear to travel. This has severely affected the Malaysian tourism industry. The next tourism vulnerability is depicted in the global financial crisis in 2007/2008, triggered by the collapse of Lehman Brothers and causing a decline in international tourist arrivals and tourism demand. Within 2014, the Malaysian Airlines (MAS) lost both MH370 and MH17, shocking the entire world. Pressures from the governments and communities leaves the aviation company struggling in a stressful condition. The airline industry is one of the most competitive industries despite the high fuel prices, foreign exchange fluctuations as well as peer competition within different airlines. Surprisingly, the magnitude of cycle fluctuation has been relatively lower because of these airline crises. The grenade attack that happened in 2016 at Puchong, Selangor is a societal crisis. The recent outbreak of Covid-19 has hugely impacted the tourism industry of Malaysia due to the global travel restrictions since mid-March 2020. Among other industries, the travel and tourism industry suffered the most severe consequences. In accordance with the constructed TSCI, six crises have been traced successfully and statistically proven to be important for policy implementation and remedial measures planning.

In summary, it has been shown from the analysis findings that the identification of core indicators on sustainable competitiveness in tourism and the purpose of crises determination have been accomplished. The overwhelming issue of indicators are simplified through the variable importance assessment using random forest regression and it is statistically proven useful in policy implementation, crisis preparedness and risk management. The constructed TSCI from the identified 12 core indicators also

aims to provide implication for practitioners, business leaders and tourism authorities for the enhancement of destination attractiveness from time to time. Apart from developing new strategies for tourism sector advancement, this study also aims to provide insightful information in policymaking for other supplementary tourism business-related sectors in Malaysia.

Conclusion and Future Research Directions

Thus far, this study argued that an overwhelming amount of non-dominant indicators has led to overloading issues and inaction of existing practices. Through focusing on a smaller amount of meaningful and country-specific indicators, based on the outcome of the current study, an effective operationalization of policies can be adopted relatively easily. Meanwhile, the set of indicators with the concept of sustainable competitiveness can also be embedded in organizational culture to enhance the competitive advantage. The identification of key indicators for Malaysia provides insightful information on how sustainable competitiveness can be positioned in tourism. The constructed sustainable competitiveness framework provides clear path for practitioners, business leaders, or even organisations with specific dimensions and selected key indicators in effective policy implementation. Addressing the manageable core set of underlying indicators for tourism enterprises is important to establish their own specific metrics that are fit and enhance progress towards sustainable competitiveness. The quantifiable metrics and dimensions are relatively easy to monitor as an absolute value of the selected indicators to provide a clear image on the progress towards sustainable competitiveness. Furthermore, the existing managerial practices can also be adopted based on the emerged key indicators to optimize economic benefits while addressing environmental concern.

Sustainability is a factor of competitiveness for tourist destinations (WEF, 2015). The identification and quantification of 12 core indicators to assess the concept of sustainable competitiveness for Malaysian tourism in overcoming the overabundance issue has been proposed. The proposed framework integrates five dimensions of sustainability and competitiveness from both theoretical and practical level. The dimensions include human capital (social); market conditions (economic); policy environment and enabling conditions (political); physical environment (environmental); and technology and innovation (technology). These are highly applicable as an instrument and useful tool for the management, planning and decision-making of tourism authorities. Moreover, the TSCI has been constructed through the aggregation of indicators based on the arithmetic index approach as an early warning mechanism for the state of tourism vulnerability, associated with the concept of sustainable competitiveness. Five types of crises that impacted the tourism sector have been captured. These are found to be highly associated with the dimensions of Tourism sustainable competitiveness. This implies that the identification of core and simplified indicators are useful for effective implementation in risk and crisis management. The types of historical crises are economic crises, environmental crises, societal or political crises, health-related crises, and technological crises. It is crucial for the depressed tourism industry to bounce back within a minimum period using efficient remedial measures. Therefore, the identification of core indicators not only benefits the businesses but is also helpful in the crisis recovering process for policymakers and practitioners.

Given the importance of simplicity and identification of useful indicators for effective operationalisation in policy formulation and implementation, it is encouraged to employ similar approach to other countries as well. However, it is understood that there is no perfect set of indicators in the world. A comparison study on different number of indicators used can be part of future research. Thus, a variety set of indicators can be determined using similar approach, depending on its suitability of application in other countries. Meanwhile, a more advanced methodology can also be applied to enhance the accuracy and validity of the measurement. This can be further expanded to regional level or other industries to assess the progress towards sustainable competitiveness.

Practical Implications for Asian Business

As discussed above, the identification of core indicators for Asian countries is important to remain competitive in a sustainable manner. The disparity in business recovery across Asian countries after the Covid-19 pandemic will remain a challenge. Small businesses, especially tourism-related businesses may take even longer time to get back to their pre-pandemic condition. Thus, it is crucial to identify the roots of restoration and to stress the role of a country's authorities as well as the available apparatus to reconstruct the national business system.

Theoretically, a similar concept provides clarity and encourages more widespread usage in policy making across the Asian countries, given the simplicity of useful indicators. The index constructed based on a comprehensive set of economic, politic, social, environmental and technology reflects the performance of the current tourism cycle. The use of coinciding and leading indicators to produce comparable information on the short-term economic conditions in Asia countries can act as a tool to track tourism business cycle and thereby, provide early signals of potential risks. Apart from the short-term economic climate of the Asian economies, the political crises, societal crises, health-related crises, and technological crises also demand attention from business leaders and policymakers. A reliable complementary analytical framework is essential to comprehend the tourism cycle fluctuations for effective policy implementation across the region.

Practically, a regulatory framework that rightly reflects the competitiveness of tourism businesses create the right environment for businesses to thrive. This right environment is the pre-requisite to economic growth. The development of markets creates new business opportunities while a favorable business climate is essential for attracting foreign direct investment. The Asian economies are intertwined in an interesting manner where the markets are connected, and the leaders are committed to working closely to enhance the regional market performance. As such, the adoption of a unified set of core indicators further enhances the existing cooperation despite the uniqueness of each country. It is undeniable that every country is a distinct part of the Asia and has its own characteristics that make them peculiar. Hence, different dimensions of the indicators could be engaged to understand the dynamics of Asian business systems.

Policy formulation involves the association of several industries. Through the understanding on tourism business cycle fluctuations, ad-hoc cooperation in production networks across several independent markets can be achieved. Furthermore, the constructed indicator can gauge and compare the business performance of Asian countries and promote a fair political-economic structure. The identification of impactful crises puts forth the cruciality to strategize businesses differently for sustainability and maintain the competitive edges. Further expansion into the global network provides insights into the demand for global flows of information. In brief, this paper detailed the needs to determine the fundamental variables in assessing the sustainable competitiveness of the tourism market. The construction of a parsimonious indicator with the leading components contributes to gauging the tourism cycle for a deeper understanding to cultivate a conducive business environment.

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References

Achmad, W., and Yulianah, Y., (2022), "Corporate social responsibility of the hospitality industry in realizing sustainable tourism development", *Enrichment: Journal of Management*, vol. 12, no. 2, pp. 1610-1616.

Agyeiwaah, E., McKercher, B., and Suntikul, W., (2017), "Identifying core indicators of sustainable tourism: A path forward?", *Tourism Management Perspectives*, vol. 24, pp. 26-33.

Arip, M.A., Kuek, T.H., and Puah, C.H., (2019), "Forecasting financial vulnerability in Malaysia: A nonparametric indicator approach", *Asian Journal of Business Research*, vol. 9, no. 2, pp. 113-120.

Balkyte, A., and Peleckis, K., (2010), "Mapping the future sustainable competitiveness resources: Aspects of forests ownership", *Journal of Business Economics and Management*, vol. 11, no. 4, pp. 630-651.

Balkyte, A., and Tvaronavičiene, M., (2010), "Perception of competitiveness in the context of sustainable development: facets of sustainable competitiveness", *Journal of Business Economics and Management*, vol. 11, no. 2, pp. 341-365.

Basiago, A.D., (1998), "Economic, social, and environmental sustainability in development theory and urban planning practice", *Environmentalist*, vol. 19, no. 2, pp. 145-161.

Blanke, J., Crotti, R., Hanouz, M. D., Fidanza, B., and Geiger, T., (2011), "The long-term view: Developing a framework for assessing sustainable competitiveness", *The Global Competitiveness Report*, vol. 2012, pp. 51-74.

Boluk, K.A., Cavaliere, C.T., and Higgins-Desbiolles, F., (2019), "A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism", *Journal of Sustainable Tourism*, vol. 27, no. 7, pp. 847-864.

Breiman, L., (2001), "Random forests", *Machine Learning*, vol. 45, pp. 5-32.

Bucher, S., (2018), "The Global Competitiveness Index as an indicator of sustainable development", *Herald of the Russian Academy of Sciences*, vol. 88, no. 1, pp. 44-57.

Calderwood, L.U., and Soshkin, M., (2019), *The travel and tourism competitiveness report 2019*, World Economic Forum.

Camisón, C., (2020), "Competitiveness and sustainability in tourist firms and destinations", *Sustainability*, vol. 12, pp. 2388.

Chernev, A., Böckenholt, U., and Goodman, J., (2015)., "Choice overload: A conceptual review and meta-analysis", *Journal of Consumer Psychology*, vol. 25, no. 2, pp. 333-358.

Chow, G.C., and Lin, A.L., (1971), "Best linear unbiased interpolation, distribution, and extrapolation of time series by related series", *The Review of Economics and Statistics*, pp. 372-375.

Christiano, L.J., and Fitzgerald, T.J., (2003), "The band pass filter. *International Economic Review"*, vol. 44, no. 2, pp. 435-465.

Commission on Growth and Development, (2008), "The Growth Report: Strategies for sustained growth and inclusive development" In World Bank and Commission on Growth and Development (Ed.), *Commission on Growth and Development Final Report*, Washington DC, World Bank on behalf of the Commission on Growth and Development.

David, B., (2017), *Model economic phenomena with CART and Random Forest algorithms* (No. 2017-46), University of Paris Nanterre, EconomiX.

Delgado, M., Ketels, C., Porter, M.E., and Stern, S., (2012), *The determinants of national competitiveness* (No. w18249), National Bureau of Economic Research.

Doyle, E., and Perez-Alaniz, M., (2017), "From the concept to the measurement of sustainable competitiveness: Social and environmental aspects", *Entrepreneurial Business and Economics Review*, vol. 5, no. 4, pp. 35-59.

Elkington, J., (1994), "Towards the sustainable corporation: Win-win-win business strategies for sustainable development", *California Management Review*, vol. 36, no. 2, pp. 90-100.

Escoto, B.E.B., Boza, M.P., and Madrigal, D.F., (2019), "Sustainable tourism: A competitiveness strategy perspective in Baja California", *Sustainability*, vol. 11, no. 24, pp. 1-15.

Fernández, J.A.S., Azevedo, P.S., Martin, J.M.M., and Martin, J.A.R., (2020), "Determinants of tourism destination competitiveness in the countries most visited by international tourists: Proposal of a synthetic index", *Tourism Management Perspectives*, vol. 33, pp. 100582.

Gavurova, B., Ivankova, V., Rigelsky, M., and Přívarová, M., (2020), "Relations Between Tourism Spending and Global Competitiveness–an Empirical Study in Developed OECD Countries", *Journal of Tourism and Services*, vol. 11, no. 21, pp. 38-54.

Gourville, J.T., and Soman, D., (2005), "Overchoice and assortment type: When and why variety backfires", *Marketing Science*, vol. 24, no. 3, pp. 382-395.

Grauwe, P.D., (2013), *Dimensions of Competitiveness*, MIT Press Scholarship Online.

Grömping, U., (2009), "Variable importance assessment in regression: linear regression versus random forest", *The American Statistician*, vol. 63, no. 4, pp. 308-319.

Hedlund, J., Longo, S.B., and York, R., (2020), "Agriculture, pesticide use, and economic development: A global examination (1990–2014)", *Rural Sociology*, vol. 85, no. 2, pp. 519-544.

Jong, M.C., Puah, C.H., and Arip, M.A., (2020), "Modelling tourism demand: An augmented gravity model", *Jurnal Ekonomi Malaysia*, vol. 54, no. 2, pp. 105-112.

Jong, M.C., Soh, A.N., and Puah, C.H., (2022), "Tourism sustainability: Climate change and carbon dioxide emissions in South Africa", *International Journal of Energy Economics and Policy*, vol. 12, no. 6, pp. 412-417.

Joshi, R., Gupte, R., and Saravanan, P., (2018), "A random forest approach for predicting online buying behavior of Indian customers", *Theoretical Economics Letters*, vol. 8, no. 3, pp. 448.

Kahn, M., (1995), Concepts, definitions, and key issues in sustainable development: The outlook for the future, *Proceedings of the 1995 International Sustainable Development Research Conference, Manchester, England, Mar. 27-28, 1995*, Keynote Paper, pp. 2-13.

Kamal-Chaoui, L., and Robert, A., (2009), *Competitive cities and climate change*, Organisation for Economic Co-operation and Development (OECD).

Lall, S., (2001), "Competitiveness indices and developing countries: an economic evaluation of the global competitiveness report", *World Development*, vol. 29, no. 9, pp. 1501-1525.

Larson, L.R., and Poudyal, N.C., (2012), "Developing sustainable tourism through adaptive resource management: A case study of Machu Picchu, Peru", *Journal of Sustainable Tourism*, vol. 20, no. 7, pp. 917-938.

Lopes, A.P.F., Muñoz, M.M., and Alarcón-Urbistondo, P., (2018), "Regional tourism competitiveness using the PROMETHEE approach", *Annals of Tourism Research*, vol. 73, pp. 1-13.

Maharaj, S., and Balkaran, R., (2014), "A comparative analysis of the South African and Global Tourism Competitiveness models with the aim of enhancing a sustainable model for South Africa", *Journal of Economics and Behavioral Studies*, vol. 6, no. 4, pp. 273-278.

Marzo-Navarro, M., Pedraja-Iglesias, M., and Vinzón, L., (2015), "Sustainability indicators of rural tourism from the perspective of the residents", *Tourism Geographies*, vol. 17, no. 4, pp. 586-602.

Mehar, M.R., Hasan, A., Sheikh, M.A., and Adeeb, B., (2018), "Total natural resources rent relation with economic growth: the case of Pakistan and India", *European Journal of Economic and Business*, vol. 3, no. 3, pp. 14-22.

Middleton, N., (2013), *The Global Casino, Fifth Edition: An Introduction to Environmental Issues*, London, Taylor and Francis.

Muangasame, K., and McKercher, B., (2015), "The challenge of implementing sustainable tourism policy: A 360-degree assessment of Thailand's "7 Greens sustainable tourism policy", *Journal of Sustainable Tourism*, vol. 23, no. 4, pp. 497-516.

Porter, M.E., (1990), "The Competitive Advantage of Nations", *Harvard Business Review*, vol. 68, pp. 73-93.

Porter, M., Delgado, M., Ketels, C., and Stern, S., (2008), "Moving To a New Global Competitiveness Index" In K. Schwab and M.E. Porte (Eds.), *World Economic Forum, The Global Competitiveness Report 2008-2009* (pp. 43-63).

Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., and Woelm, F., (2020), *The Sustainable Development Goals and COVID-19: Sustainable Development Report 2020*, Cambridge, Cambridge University Press.

Soh, A.N., Chong, M.T., and Puah, C.H., (2021), "A novel look at Thailand's tourism from a tourism composite index", *International Journal of Tourism Policy*, vol. 11, no. 4, pp. 401-415.

Soh, A.N., Puah, C.H., and Arip, M.A., (2020), "Tourism forecasting and tackling fluctuating patterns: A composite leading indicator approach", *Studies in Business and Economics*, vol. 15, no. 2, pp. 192-204.

Stiglitz, J.E., Sen, A., and Fitoussi, J.P., (2009), "Report by the Commission on the Measurement of Economic Performance and Social Progress", *Sustainable Development*, vol. 12, pp. 292.

Streimikiene, D., Svagzdiene, B., Jasinskas, E., and Simanavicius, A., (2021), "Sustainable tourism development and competitiveness: The systematic literature review", *Sustainable Development*, vol. 29, no. 1, pp. 259-271.

Tan, Z., Yan, Z., and Zhu, G., (2019), "Stock selection with random forest: An exploitation of excess return in the Chinese stock market", *Heliyon*, vol. 5, no. 8, pp. e02310.

The Economist Intelligence Unit Limited., (2017), *The Sustainable Tourism Index: Enhancing the Global Travel Environment*, World Travel and Tourism Council.

Torres-Delgado, A., and Palomeque, F.L., (2018), "The ISOST index: A tool for studying sustainable tourism", *Journal of Destination Marketing and Management*, vol. 8, pp. 281-289.

UNCTAD., (2021), *The rise of the sustainable fund market and its role in financing sustainable development*, United Nations Conference on Trade and Development.

Uyar, A., Kuzey, C., Koseoglu, M.A., and Karaman, A.S., (2022), "Travel and tourism competitiveness index and the tourism sector development", *Tourism Economics*, pp. 1-27.

Wojtasiak-Terech, A., (2019), "Regional competitiveness and local government debt", *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, vol. 63, no. 12, pp. 152-164.

Wondowossen, T.A., Nakagoshi, N., Yukio, Y., Jongman, R.H.G., and Dawit, A. Z., (2014), "Competitiveness as an Indicator of Sustainable Development of Tourism: Applying Destination Competitiveness Indicators to Ethiopia", *Journal of Sustainable Development Studies*, vol. 6, no. 1, pp. 71-95.

World Economic Forum (WEF), (2015), *The travel and tourism competitiveness report 2015. Reducing barriers to economic growth and job creation*, Geneva, World Economic Forum.